

To: Laidlaw, Tina[laidlaw.tina@epa.gov]
From: Kusnierz, Lisa
Sent: Wed 2/25/2015 11:29:12 PM
Subject: FW: Nutrient Variance Language
NutrientFSLang.docx
Optimization Study Language Draft TG.docx

From: DeVaney, Rainie [mailto:rdevaney@mt.gov]
Sent: Wednesday, February 25, 2015 4:28 PM
To: Kusnierz, Lisa
Subject: RE: Nutrient Variance Language

Attached is some language.

Please forward to Tina.

Thanks!!

Rainie DeVaney

Environmental Science Specialist

Water Protection Bureau

(406) 444-6769

From: Kusnierz, Lisa [mailto:kusnierz.lisa@epa.gov]
Sent: Wednesday, February 25, 2015 3:27 PM
To: DeVaney, Rainie
Subject: RE: Nutrient Variance Language

Hey,

That would be great if you could pull together some of the draft language. Thanks! Also, Tina Laidlaw is coming along as well since she's been so involved in the criteria/variance development.

From: DeVaney, Rainie [<mailto:rdevaney@mt.gov>]

Sent: Wednesday, February 25, 2015 11:51 AM

To: Kusnierz, Lisa

Subject: Nutrient Variance Language

Hi Lisa-

I wanted to touch base and see if you needed any draft language from the few permits that include nutrient variance prior to the meeting tomorrow? Also, we have a letter and a form for requesting the variance.

Thanks!

Rainie DeVaney

Environmental Science Specialist

Water Protection Bureau

(406) 444-6769

Fact Sheet Discussion under WQBELs

Nitrogen, total as N – The 2008 permit did not include limits for nitrogen but required monitoring for this parameter. Recently, the BER adopted base numeric nutrient standards for total nitrogen. These standards apply to Wadeable streams and select large rivers identified in Circular DEQ-12A (DEQ-12A). DEQ has adopted a statewide water quality standard variance process for nutrients which is found in DEQ Circular DEQ-12B (DEQ-12B). A nutrient standard variance is not subject to the requirements of ARM 17.30.1322(13-14).

In addition to the base numeric standards and variance procedure, DEQ may limit the nutrient load to existing levels to prevent a decline in water quality for discharges to impaired waters. Base nutrient standards, nutrient variance procedures, and other changes to Montana's water quality standards were adopted by the Board at its July 25, 2014, meeting and became effective August 9, 2014. These standards have not been approved by EPA.

Bayer's Ditch is located in the level III Ecoregion Middle Rockies (17) (http://www.epa.gov/wed/pages/ecoregions/mt_eco.htm). As a Wadeable stream, Bayer's Ditch is subject to numeric nutrient standards for total nitrogen (DEQ-12A). For total nitrogen the standard is 0.3 mg/L. This standard applies yearly from July 1 to September 30. RP analysis was performed using log-transformed values from 40 samples and the equation for "with all measurements > detection limit" from Table E-1 in Appendix E of the TSD. The calculated C_r = 21.0 mg/L for total nitrogen, which exceeds the nutrient standard of 0.3 mg/L. Therefore limits for total nitrogen must be included in the renewed permit (Appendix III).

Phosphorus, total as P – The 2008 permit did not include limits for phosphorus, but did require monitoring for this parameter. As discussed above, the BER has recently adopted base numeric nutrient standards for that include total phosphorus. Bayer's Ditch is located in level III Ecoregion Middle Rockies (17) (http://www.epa.gov/wed/pages/ecoregions/mt_eco.htm). As a Wadeable stream, Bayer's Ditch is subject to numeric nutrient standards for total phosphorus (DEQ-12A). For phosphorus the standard is 0.03 mg/L. This standard applies yearly from July 1 to September 30. RP analysis was performed using log-transformed values from 40 samples and the equation for "with all measurements > detection limit" from Table E-1 in Appendix E of the TSD. The calculated C_r = 6.65 mg/L for total phosphorus, which exceeds the nutrient standard of 0.03 mg/L. Therefore, limits for total phosphorus must be included in the renewed permit (Appendix III).

Permit and Fact Sheet Conditions

D. Special Conditions

1. Sewage Sludge:

The use or disposal of sewage sludge must be in conformance with 40 CFR 503.

2. General Nutrient Variance Requirements:

Facilities that seek coverage under the general nutrient variance must comply with the requirements established in DEQ-12B. One requirement is to complete a Wastewater Facility Optimization Study. Permittees receiving a general variance are required to evaluate current facility operations to optimize nutrient reduction with existing infrastructure, and shall analyze cost-effect methods of reducing nutrient load including, but not limited to, nutrient trading without substantial investment in new infrastructure [MCA 75-5-313(9)(a)]. DEQ encourages permittees to examine a full array of reasonable options including, but not limited to, facility optimization, reuse, recharge, and land application (DEQ-12B).

The PER and Design Report submitted to DEQ detailing the 2012 improvements of the Twin Bridges WWTF meet the requirements of the Facility Optimization Study, as these documents describe the evaluation and completed installation of a land application system for the Twin Bridges WWTF. No further action by Twin Bridges regarding the Facility Optimization Study is needed at this time.

3. Seasonal Land Application of Treated Effluent:

O&M procedures for irrigation systems are included as part of the plan and specification approval by DEQ and include a Nutrient Management Plan (NMP). Each facility shall develop and implement a NMP for land application systems, to prevent or minimize the generation and potential for release of pollutants to state waters. The plan shall achieve the objective to manage the quantity and quality of the land-applied effluent to optimize nutrient uptake and eliminate the risk of runoff to surface water or ground water infiltration/percolation.

Nutrients (Total Nitrogen and Total Phosphorus): ARM 17.30.631(2)(b) sets forth the numeric nutrient water quality standards for the mainstem of the Clark Fork River from the confluence with the Blackfoot River to the confluence with the Flathead River. Downstream of Missoula, from June 21 to September 21, annually, the Total Nitrogen as N, Total Phosphorus as P numeric water quality standards are as follows:

<u>Parameter</u>	<u>Concentration</u>
Total Phosphorus as P	39 µg/L (0.039 mg/L)
Total Nitrogen as N	300 µg/L (0.300 mg/L)

In October of 1998, the EPA approved the Total Maximum Daily Load (TMDL) for the Clark Fork River (US EPA Ref. 8EPR-EP, October 1998, see Attachment A.). This TMDL identifies Waste Load Allocations (WLA) for the Missoula WWTP for total nitrogen at 404 kg TN/day (888.8 lb TN/day) and Total Phosphorus as P at 40 kg TP/day (88.8 lb/day loading) from June 21 through September 21, annually. Pursuant to 75-5-703(6)(b), these WLA were incorporated into the previous permit as maximum daily effluent limits. The TMDL WLAs are established to achieve the water quality standards shown above. The permittee is in compliance with these WLAs. Therefore, as stated in ARM 17.30.660(7), where a facility is in compliance with an effluent limit established in a TMDL, a variance is not needed

Since the approval of the TMDL WLA, the city has connected 3,041 septic systems and one industrial discharger (J.R. Daily) that were existing sources of nutrient loading in the Clark Fork River. As part of this permit renewal, the city requested that nutrient trade credits be added to the WLA-based limits in the permit. In response to this request DEQ developed the following trading plan.

Total Nitrogen

State surface waters must be free from substances attributable to discharges that will create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and create conditions which produce undesirable aquatic life [ARM 17.30.637(1)(d) and (e)]. Nitrogen is a plant growth nutrient and is of concern because the addition of nitrogen from the mine may have an impact on the aquatic habitat and populations in the receiving water.

On July 25, 2014, the Board and DEQ approved Circular DEQ-12A (Base Numeric Nutrient Standards, July 2014 edition) and Circular DEQ-12B (Nutrient Standard Variances, July 2014 edition), respectively. The criteria in Circular DEQ-12A that apply to MFSC, located within the Middle Rockies ecoregion, is a total nitrogen standard of 0.3 mg/L, for the period July 1st – September 30th.

Circular DEQ-12A Section 2.2 states that when developing TN average monthly limits (AML) the seasonal lowest 14-day flow observed in five years (14Q5) should be used. According to the DMRs submitted by Imerys during the POR, the 14Q5 data for the season of July 1 – September 30th for the unnamed tributary (or MFSC) is 0 cfs, since no flow was observed July – September 2012 and July – September 2013.

With no dilution flow, the standard of 0.3 mg/L TN would have to be met at 'end of pipe' at Outfall 001. This is not currently possible as discussed above, the projected maximum concentration in the effluent is currently 9.4 mg/L nitrate, which is approximately equivalent to TN since the Total Kjeldahl Nitrogen (TKN) concentration is typically nondetect.

Montana State Law (§75-5-103(22) and 75-5-313, MCA) allows for variances from the

base numeric nutrient standards found in Circular DEQ-12A. The Nutrient Standards Variances are laid out in Circular DEQ-12B. As the Mine's sediment ponds are most closely characterized as "lagoons not designed to actively remove nutrients" in Table 12B-1, the nutrient standards general variance applicable to Beaverhead Mine is "maintain current performance." The variance is designed to be a technically-achievable level, expressed as an average monthly load limit. Imerys sent a letter requesting coverage under the general variance to DEQ on October 8, 2014.

Review of monitoring data for Outfall 001 since 2007 shows that the average TN concentration was 5.4 mg/L. Therefore, the LTA = 5.4 mg/L. The Average Monthly Limit (AML) is calculated from the LTA based on Table 5-2 of the TSD (cv = 0.3, 95th percentile, n=4), $AML = 5.4 \times 1.26 = 6.8 \text{ mg/L}$. In order to cap at current performance, the AML is multiplied by the maximum 30-day average flow rate for the POR, which was 72 gpm (0.1 MGD), as follows: $6.8 \text{ mg/L} \times 0.1 \text{ MGD} \times 8.34 = 5.7 \text{ lb/day}$

MCAs

75-5-313(9)(a) Permittees receiving an individual, general, or alternative nutrient standards variance shall evaluate current facility operations to optimize nutrient reduction with existing infrastructure and shall analyze cost-effective methods of reducing nutrient loading, including but not limited to nutrient trading without substantial investment in new infrastructure.

75-5-313(9)(b) The department may request that a permittee provide the results of an optimization study and nutrient reduction analysis to the department within 2 years of receiving an individual, general, or alternative nutrient variance.

Fact Sheet Language – draft

Facility Optimization Study

Permittees receiving a general variance are required to evaluate the current facility in order to optimize nutrient reduction using the existing infrastructure (§75-5-313(9)(a), MCA). This optimization study may include, but is not limited to, an analysis of facility operations and maintenance, reuse, recharge, land application, and nutrient trading. Any changes to facility operations as a result of this optimization study are only intended to be refinements to the wastewater treatment system already in place; any facility optimizations:

- Should only address changes to facility operation and maintenance and should not be structural changes;
- Should not result in rate increases or substantial investment; and
- Must include an analysis of the feasibility of nutrient trading within the watershed.

DEQ may request the results of this optimization/nutrient reduction analysis within two years of granting a general variance to a permittee (§75-5-313(9)(b), MCA).

Permit Language

In the Special Conditions section of the permit

Facility Optimization Study

In the Compliance Schedule section of the permit

Compliance Schedule language and table

Current Permits

Billings

None (request denied; no nutrient standards for Yellowstone River)

Boulder

None (omitted in draft; needs corrected in final determination)

Libby WTP

None (no RP for TN or TP?)

Missoula

None (TMDL WLA)

Three Forks

None (no nutrient standards for Madison River)

West Glendive

None (no RP for TN or TP)

Yellowstone Boys and Girls Ranch

None (no receiving water data to determine RP)

Beaverhead Mine

D. Special Conditions

1. Nutrient Variance – Optimization Study

Permittees receiving a general variance are required to evaluate current facility conditions in order to optimize nutrient reductions within the existing infrastructure and shall analyze cost-effective methods of reducing nutrient loading including, but not limited to, nutrient trading [§75-5-313(9), MCA]. In order to ensure continual progress, DEQ is requiring Beaverhead Mine conduct the following:

- Identify specific nutrient (nitrogen) sources contributing to the effluent in Outfall 001, including concentrations, volume and frequency.
- Compare future anticipated nutrient (nitrogen) monthly loads to future projected nutrient standards.
- Evaluate options for mitigating nutrients (nitrogen) before, during, and/or after retention by the settling pond system. Include cost and expected efficacy.
- Prepare a report (“Optimization Study”) based on the above evaluation and any additional developments (including DEQ guidance, technical literature, etc.) and submit to the DEQ by no later than July 1, 2019.

By no later than January 28th of each year beginning in 2016, Imerys shall submit an annual report documenting progress made during the previous year

and the planned actions for the upcoming year.

Kalispell

D. Special Conditions
4. Nutrient Variance – Optimization Study

The permittee must evaluate current facility operations in order to optimize nutrient reduction with existing infrastructure and shall analyze cost-effective methods of reducing nutrient loading including but not limited to, nutrient trading without substantial investment in new infrastructure. The optimization study should examine a full array of reasonable options including but not limited to, facility optimization, reuse, recharge, and land application.

Changes to the facility operations resulting from the analysis carried out as above are only intended to be refinements to the wastewater treatment system already in place. Therefore, the optimizations:

1. should only address changes to facility operation and maintenance and should not be structural changes;
2. should not result in rate increases or substantial investment; and,
3. must include exploration of the feasibility of nutrient trading within the watershed.

The results of the of the optimization/nutrient reduction analyses must be submitted to DEQ, in a written report, postmarked no later than two years after the effective date of the permit.

Twin Bridges

D. Special Conditions
2. General Nutrient Variance Requirements:

Facilities that seek coverage under the general nutrient variance must comply with the requirements established in DEQ-12B. One requirement is to complete a Wastewater Facility Optimization Study. Permittees receiving a general variance are required to evaluate current facility operations to optimize nutrient reduction with existing infrastructure, and shall analyze cost-effect methods of reducing nutrient load including, but not limited to, nutrient trading without substantial investment in new infrastructure [MCA 75-5-313(9)(a)]. DEQ encourages permittees to examine a full array of reasonable options including, but not limited to, facility optimization, reuse, recharge, and land application (DEQ-12B).

The PER and Design Report submitted to DEQ detailing the 2012 improvements of the Twin Bridges WWTF meet the requirements of the Facility Optimization Study, as these documents describe the evaluation and

completed installation of a land application system for the Twin Bridges WWTF. No further action by Twin Bridges regarding the Facility Optimization Study is needed at this time.

Helena

D. Special Conditions

4. Facility Optimization Study for TN and TP – The permittee shall conduct a facility optimization study to improve treatment efficiency for TN and TP and submit a plan for achieving optimization by the expiration date of the permit. Effluent limits will be developed from the optimization study and may be applied in the next permit renewal. The permittee shall adhere to the following schedule with respect to optimization:
 - a. The facility optimization study shall be completed and submitted to the Department postmarked no later than one year after the permit effective date. The study must identify the long term average (LTA) concentrations of TN and TP achievable by the facility in its present configuration. Effluent load limits for TN and TP will be developed based on these LTA and the design flow of the facility following the method use to develop the IWLA in this permit. The smaller of either the optimization-based load limits or the IWLA in this permit will be incorporated into the next permit renewal as effluent limits for TN and TP.
 - b. No later than two years after the permit effective date, the permittee must submit a plan for implementing the optimization study and achieving the effluent concentrations and load limits described above. The plan must include achievement of these effluent limits no later than the expiration date of this permit.
 - c. At the end of each calendar year following the submission of the above plan, the permittee shall submit an annual report describing progress made towards implementation of the optimization study and compliance with the effluent limits described above. Progress reports for the previous year shall be submitted and postmarked no later than January 28th.